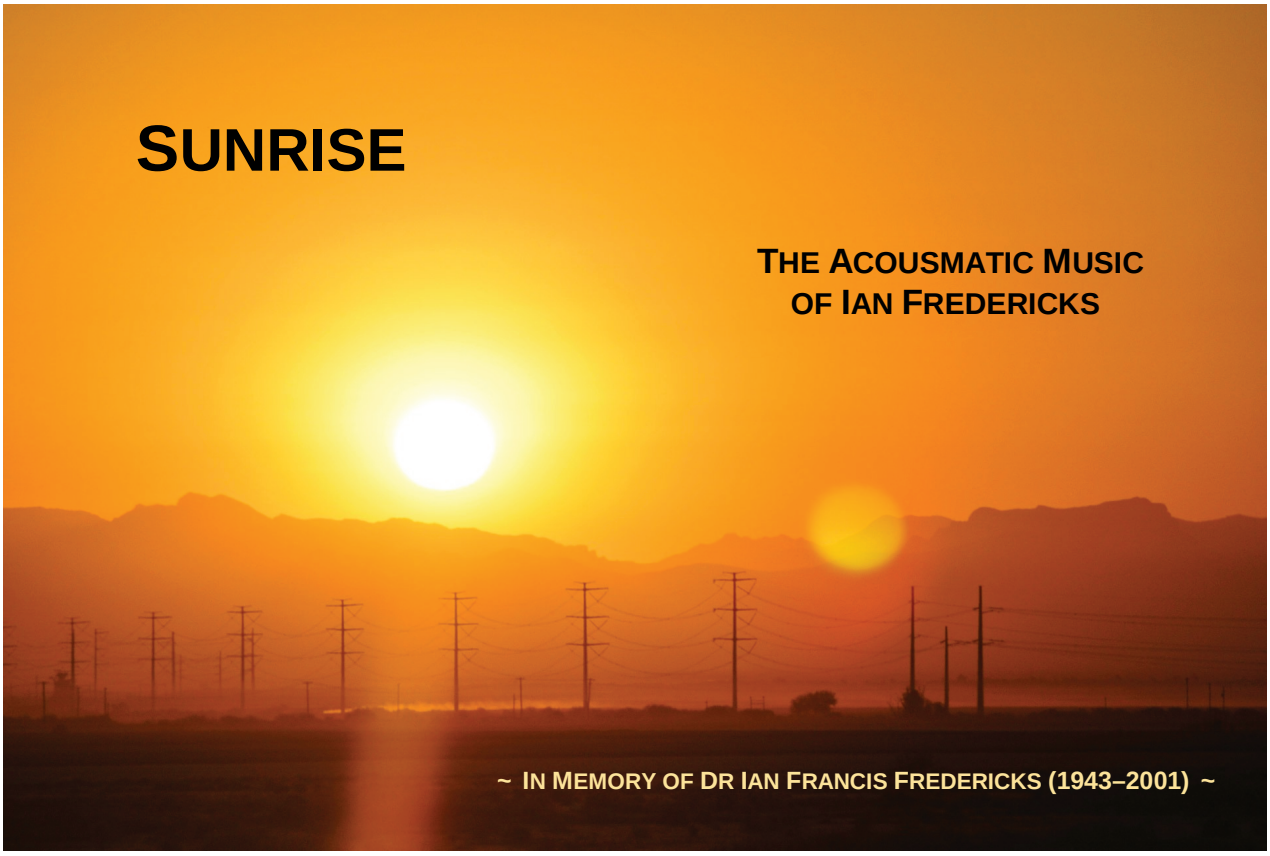
SUNRISE
THE ACOUSMATIC MUSIC
OF IAN FREDERICKS
~ IN MEMORY OF DR IAN FRANCIS FREDERICKS (1943–2001) ~

SUNRISE: THE ACOUSMATIC MUSIC OF IAN FREDERICKS

BIOGRAPHICAL NOTE: IAN FREDERICKS, IN HIS OWN WORDS

IansMuse is about "**The Creative Way**" or *"Dancing to the tune of a different piper"*. IansMuse is the life, music, science, engineering and wisdom of Ian Francis Fredericks (1943[–2001]) once described by a friend as "a small time genius".

I was born quite young in Sydney Australia on the first day of December in the year One Thousand Nine Hundred and Forty Three AD. I grew up in the town of Lismore on the far North Coast of New South Wales. I was initially educated *in the ways of the three Rs, mathematics, literature, science, music (piano, singing, drums, fife, bugle, bandsmanship) and Jesus Christ (although it seems they got that wrong too!) in the Catholic school system by Presentation nuns and then by Marist brothers where every effort was made to beat and shame all sense of creative intelligence out of me for a period of thirteen years.*

After fifty-seven years of universities, research, music-making, scientific exploration of the ways of the universe, and a lot of help from some very dear friends and colleagues along with copious proportions of sheer pig-headedness, I have managed to overcome the suppressions of Sister Mary Hitler, Brother Xavier Mussolini and Father Genghis Khan and release my genius, learned to own my intelligence along with my grey eyes and brown hair, survived two heart attacks along with two lots of multiple bypass surgery, lived with long-term clinical depressive illness for twelve years, fathered two (now grown) children (Joshua and Rebecca), managed to keep a marvellous woman (Dawn) relatively happy – I think – for thirty years, played and composed a fair amount of music, developed some interesting engineering and found at last, I believe, "The Creative Way".

As a child I learned to play Bach and Beethoven on the piano (reasonably well), to sing Gregorian Chant in Latin (Italianate) exceptionally well as I remember and (fortunately) there are no surviving recordings to contradict my memory in this regard! ("…the older a man gets the faster he could run as a boy…"), to play fife in a marching band (quite well), to lead the marching band (poorly), to play soccer (hopelessly!), the Scientific Way, the Catholic Way, the dairy-farming way (uncles had farms where we – about 4,931 cousins and I – would wile away school hols and weekends swimming in creeks, climbing trees, learning to swear, wandering hills, falling down and getting cut, running from snakes (some very dangerous, such as the tiger snake and king brown), and something of the Italian Way), the Moral Way, the curds and whey, the Repressed Way, the Australian Way, the British Way and a good deal about the American Way. And various other ways such as girls, dogs, birds, how to grow lettuce (at which I was dreadful), throwing stones (I was hopeless at this too), crackers, ice-cream, how to be caned, how to control parents and so on.

At school I was a very good academic, particularly in physics, chemistry and mathematics – Dux of my class for six years and Dux of the school in my final year (I have documentary evidence!) – and I left school at seventeen with a Commonwealth Scholarship to university. Off to the University of Sydney, I enrolled in science and suddenly feeling like a very small fish in an enormous pond. It has taken me almost until now to overcome this repression (shyness?) and take my place (in my own mind) amongst the thinkers and problem solvers (and, I hope, problem creators) of my peers.

My first year at university was disastrous (from just about every way). I did however discover many new ways such as the drinking way, the sexual way, the way of love (unrequited) and the way to fail academically.

During this first encounter with adulthood I also discovered for the first time in my life the way of deep personal strife. I found a sister (Cecily) in a state of deep personal strife and again for the first time the loss of a close relative and the way of grieving. This left me with a sister (Mavis) who still had a boy in school (Christopher) and no adequate means of support. In a strange (for me) and frustratingly naïve way I started to feel responsible here. Unbearably frustrating because I was too young to know how to fulfil this feeling of responsibility and was inclined to wallow in bravado and boozing. It was also at this time that I discovered some of my own personal truth. I was adopted! Who I thought were my parents were in fact my grandparents. My 'sister' Cecily was in fact my mother and I was illegitimate. A bastardly accident of the Second World War with a (mongrel dog of a) father who went and got himself killed. The philosophical and theosophical implications of this truth in view of The Way of Holy Mother The Church were at the time personally devastating. I had been taught in the most didactic and unrelenting way that sex outside of marriage (and inside of it to some degree) was the most filthy and the most vile of sins in the Eyes of God and caused the re-crucifixion of my Blessed Saviour Jesus and the wrenching pain of His Holy Mother over and over again. I therefore concluded I was little more than filthy scum and a squirming product of the Prince of Darkness, The

Devil Himself. This new-found knowledge coupled with my own developing sexual maturity and desire cast me into the abyss.

However, it was through this crisis that I discovered Clarie's Way [Francis Clarence "Clarie" Fredericks, 1890–1978, Ian Fredericks' grandfather – but always regarded by him as his father]... {Ian Fredericks, 25.viii.2000}

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CONTINUATION: THE EXECUTIVE PRODUCER'S BIOGRAPHICAL NOTE

It is clear that the autobiographical note above is far from complete, so I will add a few salient points pertaining to Ian Fredericks' later life: For some years, Fredericks was a jazz pianist who, after completing high school, was an industrial chemist for five years. Following that, he worked for the Australian Atomic Energy Commission in the Engineering Research Division for eight years, at the Atomic Facility in Lucas Heights, south of Sydney. (His experience there with radioactive materials to a large degree explains his passionate stance against atomic weapons, most obviously articulated in **Viable Alternative***.) As a young man, he studied jazz and classical piano; but as a composer, he worked almost exclusively in the domains of electroacoustic and computer-synthesized sound and music, having gained an extensive technical and professional background in nuclear, electronic, audio, chemical, mechanical and computer engineering. Fredericks was one of the first students to enrol and undertake training in the Sydney Conservatorium's jazz program under its initiator, Howie Smith. In the mid-1960s, he undertook a short course in 'Scratch Orchestra' with the Australian composer David Ahern, and for a brief period studied composition with the Australian composer Raymond Hanson. He studied music in an Arts Degree program at the University of Sydney in 1976 and 1977, until being forced to withdraw due to ill-health. While there, in conjunction with David Hush, Jane Fitch and Mark Underwood, he established and performed in a contemporary music improvisation group called* ***LEVEL 4****. This was a 'free improvisation' outfit that followed in the tradition of John Cage, Karlheinz Stockhausen, Mauricio Kagel and others. During these two years, he also met and studied with the Australian composer Dr Martin Wesley-Smith, who introduced him to electronic music and, says Fredericks himself, "changed my life".*

In 1978, under the direction of Professor Peter Platt, Ian Fredericks took up the position of Technical Officer in the Music Department at the University of Sydney, from which time he taught electronic and computer music as well as digital sound-synthesis, having built and directed the Sydney University Experimental Sound Studio [SUESS] within which he realized many of his earlier acousmatic compositions (such as **Mother Piece**, **Viable Alternative**, **Some Quiet Graveyard***, and* **Sunrise***). During this period, he undertook a number of technical design and development projects relating to electronic and computer music composition and performance; he was extensively involved in composition, and in the concert performance of contemporary Australian music. Concurrently, he co-directed from its outset (in 1976, with Dr Martin Wesley-Smith) the Sydney-based multimedia electroacoustic music collective* ***WATT*** *which, over the years (1976–1998), gave numerous memorable concerts. Fredericks was also the technical director and a founding member of the Board of Directors of the contemporary music ensemble* ***The Seymour Group****, from its inauguration in 1977 until 1984.*

Because of his health problems as declared earlier, tragically, in 1993, Fredericks was medically retired from his academic position. However, he was able to build his own sound-studio at home in Lewisham, Sydney, and to continue his research and creative outpourings there. Later, he enrolled as a PhD candidate at the Sydney Conservatorium of Music, the University of Sydney, and it is from this period in his life that all of his later, entirely computer-generated, acousmatic music emerged. Sadly, this was all cut short by Fredericks' untimely death, caused by a massive stroke, on 15 March 2001. He was awarded his doctorate posthumously in 2006. (Since Ian Fredericks' PhD application is of some biographical, philosophical and technical interest, I conclude this biography with it, below):

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For the past twenty years I have actively been involved in electroacoustic music composition, performance and research. Since 1987 I have been specifically interested in computer software development for music composition and sound-synthesis. Over the course of this work I have formed the view that the developing use of computers in the composition and realization of musical works offers new approaches to music creation in several ways:

1. The conception and composition of musical ideas need not be restricted by the capabilities of corporeal gesture. Exploration of musical ideas need only be restricted by our capabilities of perceiving that which is musical. This approach to creative musical thinking I term 'music of the psych';

2. Making music with electroacoustic-based sound-generating devices (instrument types) – particularly using computers – and the possibilities of writing one's own custom-designed software provide the composer with tools with which to explore new ways of thinking sound (and thus music). In my view the most powerful of these are the ability to dynamically manipulate:
(i) Apparent Spatial Position of (phantom) sound-sources;
(ii) Musical Timbre.

The essence here is the word 'dynamically'. Music is primarily a temporal art and the sound-structures which evolve, in a controlled (i.e. composed) way, over time can provoke new and exciting musical ideas. My research work over the past ten years has been directed at the development of tools to realize these kinds of musical ideas. The tools (programs) have all been developed from the first principles after exhaustive investigation of musical perception at the ontological level. Programs at two different levels have been developed:

1. Sound-Synthesis Programs:
(i) ***SINGER****: This is a timbral-synthesis engine which is based on a model of the human voice apparatus. (NB: Not simply a speech synthesizer!);*
(ii) ***SPACE7****: A space-synthesis engine which allows for the continuous specification of spatial position within a theoretical (specifiable) space;*

2. Music Composition Programs:
(i) ***CURVIES****: A graphic user interface (GUI) which allows the composer to specify musical parameters by drawing curves. The drawing can be done on the computer screen or on paper (away from the computer and in colour) and scanned into the computer. Curves which describe approximately twenty different parameters including* ***SPACE7*** *parameters are supported;*
(ii) ***SCORE****: A second GUI which is used to put together a visual representation of an entire composition (i.e. a score) in specific parts. This is based on a model of 'scoring practice' and was developed to assist in the task of assembling small bits of music into larger bits (composing). The 'score' can be compressed or expanded along a time-axis (as desired) and individual slices selected for alteration;*
(iii) ***GENERAL****: A method of specifying complex sets of sound-synthesis and composition parameters using simple text programs which is upwardly compatible with the above GUIs and downwards compatible with the sound-synthesis engines.*

My current interest is to pursue the composition of musical works based around the philosophies mentioned above using the tools and composition and synthesis tools that I have developed. These tools allow me to incorporate musical ideas centred in timbral and spatial manipulation of sound at the compositional level. Works of mine to date such as **Mother Piece** *(1978–1979),* **Some Quiet Graveyard** *(1984),* **Sunrise** *(1986), etc. have explored the use of spatial manipulation as integral compositional ideas.* **Requiem for a Planet** *(1994–1995) began my serious work in timbral manipulation using computers through synthesis for the sung voice (Latin) and synthesis of the Latin spoken text. My* **Mist** *Series (1992–1998) continued this timbral work with the development of my* ***SINGER*** *program which was used to synthesize the various noise types of sounds (sea, thunder etc.). Current work is concentrated on combining all of the above and I have composed a number of short studies which offer considerable promise. I have started a large dance work which will be entirely in this mode and which I intend to present as part of this candidature.*

A further aspect of my work at present involves the application of so-called "Artificial Intelligence" in my compositional work. I am using this kind of approach at the phase structure level in the dance piece as applied to aspects of pitch, timbre, rhythm and spatial manipulation. Although a considerable amount of my work has been of an experimental research nature, I am keen to pursue this candidature in the area of music composition. The impetus for my research (both technical and musical) has always been music composition and my philosophy remains "Science in the Pursuit of Art" and not the other way around. {Ian Fredericks, 19.x.2000}

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THE EXECUTIVE PRODUCER'S INTRODUCTION

Ian Francis Fredericks passed away – very unexpectedly and prematurely – on 15 March 2001. It was my privilege to study with him in the Music Department at the University of Sydney from 1981 onwards, over which time we became close colleagues and good friends. Recently, having not listened to Ian's music for quite some time, I savoured it again, and was thunderstruck by its awesome power and beauty. I decided there and then that this wonderful music – so much of which has never before been commercially released – needed to be presented to the public as an anthology for the first time ever on CD. (However, this collection does not pretend to be comprehensive: while perusing Ian Fredericks' papers, mention of seven other pieces came to light, at least five of which are studies probing various facets of his ***IANSMUSE*** *software package.)*

In recent years, there has been a plethora of visual artists who have tinkered a bit with computers, elicited some sounds from them and – ignorant of both music history and compositional structure – adopted the self-styled title of 'sound artist'. Here, in total contradistinction, we have in Ian Fredericks a ***real*** *sound-artist! Over many years of extensive thought and labour, Fredericks designed and built his own 'compositional toolkit' – various items of hardware as well as computer software – in order to realize his vast artistic imagination. Foremost, perhaps, among these tools is his program suite* ***IANSMUSE****. Briefly,* ***IANSMUSE*** *works by interpolating parametric data between well-specified points in time; also, in addition to possessing a spatial-synthesis engine (****SPACE_N****), one of its sound-synthesis engines,* ***ADD****, engages Additive Synthesis, while another,* ***SINGER****, employs Frequency Modulation [FM] whereby its carrier-to-modulator [c:m] ratios can be set to natural numbers so as to produce sounds with spectra belonging to the harmonic series. Composers can specify data in the form of hand-drawn curves.* ***IANSMUSE*** *is also able to import pre-recorded sounds (as evinced by* **Violins in Space***), making it an extremely powerful compositional apparatus indeed! Ian Fredericks describes his* ***IANSMUSE*** *in far greater detail:*

IANSMUSE *is a computer-based compositional environment consisting of a suite of computer programs designed for direct digital synthesis (i.e. in software) of sound and music using a general-purpose computer equipped with a Digital-to-Analogue Converter system. Development of* ***IANSMUSE*** *began in 1986 when the University of Sydney provided the Music Department with a grant to establish a Computer Music Project for composition and research. The grant provided a multi-user mini-computer which ran under the UNIX operating system. The system was called* ***JESSIE****. Several music environments were set up on this system including CARL and CMIX (Lansky 1985), as well as an in-house environment called MUSIC IN C written by Bruce Ellis (a PhD student in Computer Science at the University of Sydney at the time (1987)). These environments were found to be too technical in nature and far too arcane for the students in the Music Department, and so I decided to write* ***IANSMUSE*** *with the object of providing a more straightforward and musically intuitive environment.* ***IANSMUSE*** *was consequently originally developed to run under UNIX SYSTEM V/68 M8020 r2v3.0 on a Motorola sys113 VME bus super microcomputer. The* ***IANSMUSE*** *programs have since (1992–1999) been ported to run on a Personal Computer (PC) and this is the platform currently favoured for continuing development. Work is currently under way to do a full port to the Apple Macintosh platform.*

IANSMUSE *has been designed for the composition and* realization *of musical ideas. Emphasis has been given to the task of* realization of musical ideas *as distinct from merely* sound-synthesis*. Considerable work has been reported on* sound-synthesis *... and my own work draws heavily from this literature. In the design and development of* ***IANSMUSE****, I have attempted to offer a fresh approach in the task of software engineering for the composer by integrating attributes of musical performance into the composer's immediate environment. The environment also includes composition algorithms that have been designed to generate musical ideas in a way similar to what one may expect from an improvising performer. That is, considerable thought has been devoted to the idea of what might be termed a* musically intelligent assistant*. ...*

... In the design of ***IANSMUSE*** *I represent* musical progression *by the technique of* linear piece *charting or graphing. I represent* musical time *on an absolute time-line by indicating exactly at what point along the time-axis a certain condition exists. That is, I specify a precise value for a parameter after a precise period of time has elapsed after some starting time. I then address the idea of* musical interpretation *(at least initially) by devising a computational procedure that will* interpolate *the value of the particular parameter between the two specified values according to some suitable (for that particular parameter) mathematical curve. The progression of the musical idea is thus represented by a series of break-points on a time-curve joined by straight lines (*linear pieces*). (This method is the same as that used for specifying the envelope [attack, decay, sustain and release] points for the volume envelope in many sound synthesizers [VCS3, Moog, Yamaha DX7] and computer sound-synthesis programs [C Music, Music V etc.]). The* ***IANSMUSE*** *computer procedures then provide the necessary interpolation including the necessary type (*non-linear *mathematical curve) of interpolation between the break-points. In* ***IANSMUSE****, some twenty-six parameters are continuously used to specify the progression of each individual musical part. ...*

IANSMUSE *considers a piece of music as consisting of a system of myriads of sound-emitting particles free to move in a three-dimensional space which includes the listener. Each musical part in a composition can be regarded as such a particle. Particles are therefore endowed with musical properties. A number of things can change about the state of a particle from moment to moment. That is, each particle has what physicists call degrees of freedom. Degrees of freedom define the way a particle can move and the moving particle in its space is called a dynamical system. ... Six degrees of freedom for each musical particle are identified in* ***IANSMUSE****: Pitch; Volume; Timbre; Bearing; Elevation; Distance. All six degrees of freedom are specified relatively directly to the listener (or observer). (If we consider the case of a piece of symphonic music in this way, the system under consideration could have up to 40 parts [or musical parameters] giving a total of 240 degrees of freedom.)*

In Physics, a system with one or two degrees of freedom is a simple dynamical system so-called because the state of the system can be defined at any time by a straightforward mathematical identity (a differential equation). Such a system tends to be linear and small changes in one of the degrees of freedom will not alter the system markedly. A simple dynamical system is also predictable. That is, if we are given an accurate set of initial conditions (starting point) then it is possible to predict the state of the system at any time in the future. A system with many degrees of freedom is a complex dynamical system and cannot be so easily described. Systems with many degrees of freedom tend to be non-linear. That is, the degrees of freedom tend to interact: a small change in other states and the overall change in the system can be large. Such systems tend to be unpredictable. Our music system is thus a complex dynamical system.

Describing the state of a complex dynamical system at any arbitrary time is not such an easy task. If the true dynamic nature (i.e. the continuous evolution) of the system is to be simulated then the conditions must be described at many time-intervals. The technique under investigation here consists of specifying control values of parameters at arbitrary points in time and using the computer to construct continuous curves by a variety of interpolation techniques. The approach also intrinsically allows for specification at an arbitrary degree of determinedness with the computer filling in the gaps. Interpolation techniques can include methods of injecting into the curves, and development of such techniques constitute a significant part of the work. This technique was described in my paper entitled ***Jessie*** *at the Brisbane New Music Conference in 1990. ...*

The approach outlined here will remove the constrictions implied by corporeal gesture and provide the creative musician with an environment which encourages the exploration of music which is directed only by the creator's (composer's) psychic perception of what is musical. Real-time computer-music systems *usually imply some level of 'improvisation', either from the computer itself or from human performers associated with the piece. That is, the level of specification that can be determined by the composer is restricted. This project, like many projects related to language development, is concerned with making full use of the power and versatility of direct audio-synthesis using a computer by investigating ways of making this power more accessible to the composer while, at the same time, providing a way of specifying compositional intent to the machine which allows for a (arbitrarily) high level of determinacy. {Ian Fredericks, 27.v.2000}*

As becomes evident from reading the programme annotations below, much of the music presented on these two CDs is inspired by mythoi. *In constructing the CDs' track-order, I have attempted to create a kind of 'meta-*mythos*' of my own – one of Creation and Self-Destruction. The work* **Sunrise** *might be viewed as a cosmogony, a myth of creation, whereas* **Mother Piece** *represents fecund procreation and fertility. Between them lies* **Violins in Space**, *which metaphorically portends mankind's ability to leave Earth's ecosphere and travel into space. (I am reminded of a famous scene from Stanley Kubrick's 1968 epic science-fiction film* ***2001: A Space Odyssey****, where an ancient hominid discovers that a leg-bone can be used both as a tool and as a weapon. Upon throwing it into the air, it transforms instantly into a spacecraft!) Following* **Mother Piece** *are the extant compositions from the incomplete* **Death of a Dragon** *cycle, founded upon the Arthurian myth, which itself embraces various facets of human life – love, death, war, betrayal, searching, striving: human life in all of its vicissitudes and messy complexity.* **Viable Alternative** *then warns of the danger of self-annihilation from atomic weapons, but instead we end up destroying ourselves anyway; the succeeding two pieces,* **Some Quiet Graveyard** *and* **Requiem for a Planet**, *lament this avoidable catastrophe. Finally,* **StarMist** *portrays the Cosmos after Man has departed from it.*

Concerning the incomplete **Death of a Dragon** *cycle: Ian Fredericks at different times appears to have conceived two distinct, yet interrelated, schemata for this large-scale work. Hence its compositions' names here may or may not match those given in his PhD thesis [Sydney Conservatorium of Music, University of Sydney, 2006 – degree awarded posthumously]. For instance, by comparing various .wav files, I discovered that* **Warriors** *and* **Nine Knights** *are identical; I chose the latter title since it is more poetic whilst better representing the work's sound-structure. Moreover, on a broader ambit, Fredericks' papers do mention compositions that either remain unfinished or were never even begun! (***StarMist***, for example, forms the third*

piece of a projected trilogy, **Trilogy of the Mist**, *much of which no acoustic trace apparently exists.) On the other hand, the relatively modest piece* **Spirals**, *lifted straight out of* **StarMist**, *sounds polished enough – and yet I have encountered no reference to it at all within any of Ian Fredericks' copious writings.*

I have furnished the music from the **Death of a Dragon** *cycle on CD1 in an order that corresponds as closely as possible to Fredericks' two cognate schemata – individual pieces therein stem from one or the other schema, or from both – and also to the Arthurian myth itself, upon which* **Death of a Dragon** *is founded.* **Talisman** *survives only as five very brief fragments, the second and fifth of which are unmixed and unspatialized monaural; from* **Avalon**, *consigned to the beginning of CD2 for technical reasons (otherwise it would have been placed directly after the piece* **Death of a Dragon***), only what seems to be its second section, as insinuated by the rather cryptic name of its .wav file, appears to have been completed – although, in my opinion, it can perfectly well stand on its own as a coherent piece of music.* **The Battle of Camlan** *(also referred to within Fredericks' PhD thesis as the* ***Battle of Darkness****, but – when considering geographical information relating to the Arthurian legend –* not ***The Battle of Salisbury Plain****) remains only scantily, in skeletal form.*

Certain tracks upon these two audio CDs exhibit occasional extraneous clicks and other transient noises – even those compositions that purport to be finished. One ought to presume however, on the basis of his earlier output, that Fredericks would have eliminated these sonic glitches in due course. (I possess neither the software nor the equipment to perform such fastidious digital editing satisfactorily myself, so that these unwanted sounds unfortunately remain.)

Both audio CDs here are, naturally, stereophonic. This is a huge compromise in terms of Ian Fredericks' music as originally conceived for, and accomplished within, his 10-channel home-studio set-up, based upon a hemispherical model of sound-projection. But even more recent multi-channel audio specifications (such as Dolby 6.1 surround sound) are, according to Fredericks' former PhD supervisor Dr Greg Schiemer, inferior to the Fredericks model – and so, likewise, would compromise his music. Thus it was decided in the end to proceed with two-channel (binaural) mix-downs on the grounds of this format's ubiquity.

I wish to thank wholeheartedly Professor Winsome Evans, Dr Michael Smetanin, Judith Foster (from the Australian Music Centre), Dr Greg Schiemer, Dr Anthony Hood, and the Fredericks family for their support and encouragement – the last for supplying the .wav files of all of the pieces throughout these CDs as well. The ***Sunrise*** *album would not exist without each and every one of them!*

Ian Fredericks' musical vision vastly outstripped its sonic realization on account of his early death. On a personal note, my task in amassing the music here (although in some ways quite onerous, not to mention a great burden of responsibility) has been a labour-of-love on behalf of a former teacher, a highly esteemed colleague, and a dear friend who I hold in supreme regard both as a man and as an artist.

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COMPACT DISC 1

TRACK 1. IAN FREDERICKS (1943–2001): *SUNRISE* (1986) 10':50"

When the Sun rises, is there any need to herald him? [Chinese Proverb]

Sunrise was composed in 1986 especially for a visit by the composer to the People's Republic of China when, together with [Dr] Martin Wesley-Smith (another Australian composer), a Fairlight Computer Musical Instrument was installed at the University of Beijing – a donation by the Australian Government – by these two composers. The piece was realized at SUESS [the Sydney University Experimental Sound Studio], an installation directed by Ian Fredericks.

Sunrise is dedicated to the people of China. {Ian Fredericks, 1991}

[Ian Fredericks also states that he] "made extensive use of spatial-synthesis in its conception, design and execution, and all projected into only *two* channels, but encoded with out-of-phase signals so it will decode using Dolby Pro-Logic and ambisonic decoders". {Ian Fredericks, 12.x.2000}

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TRACK 2. IAN FREDERICKS (1943–2001): *VIOLINS IN SPACE* (1999) 6':07"

1. ***Étude 1*** @ 0':03"
2. ***Étude 2*** @ 1':56"
3. ***Étude 3*** @ 2':49"

All sounds used in ***Violins in Space*** were generated using a violin and then treated in **STREAM** and **SPACE_N** [programs that comprise an integral part of Ian Fredericks' **IANSMUSE** software suite]. ***Violins in Space*** was originally designed as a demonstration piece (study) in using the [two aforenamed] programs ... The piece was designed to use the real-time software version of **SPACE_N** in a real-time performance piece with a live violin player and a studio-prepared multi-channel part played directly off a computer with eighteen discrete channels decoding to thirty-six channels using nine Dolby Pro-Logic decoders. The piece does not require the services of a skilled violinist as such, and is designed more to be within the capabilities of a *performance*-artist (at the time of writing the player I had in mind was myself – I am not a violinist). [Here, Ian Fredericks himself is eliciting sounds from a violin that belonged to his [grand]father Clarie.] {Ian Fredericks, 12.x.2000}

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TRACK 3. IAN FREDERICKS (1943–2001): *MOTHER PIECE* (1978–1979) 15':25"

Simulation of moving sound-sources is one of the important compositional elements in ***Mother Piece***. I had to build some electronic devices especially for the work. All the sound-manipulation was done using a plethora of multi-track tape recorders and the initial master was done in four channels. The two-channel reduction presented here was mixed from an original eight-track master. Much of the spatial movement is lost but I think there is enough of the sensation of space to preserve the compositional intent. Three types of sounds are used: the female voice (as the most natural and human sound of all); sine tones (the most unnatural and inhuman sound of all) and percussion sounds, which serve as a bridge between the human and the inhuman. Overall the piece is a progression from the naturalness of the female voice to the harsh 'supra-reality' of industrial synthesized sound. The female voice was kindly supplied by Jenny Tebbut. The sounds she sang all came from the [phonemes] of the word 'mother'. The sine tones were all generated using a high-precision scientific instrument (a wave-form generator). The percussion sounds were derived from cymbals, a drum, crotales, and a set of small brass bells [all played by the composer]. ***Mother Piece*** was commissioned by the Music Department of the University of Sydney with financial assistance from the Music Board of the Australia Council for the Arts. {Ian Fredericks, 1995}

[Fredericks further declares that] "[the piece originates] from the days when I was a nuclear war fighter. Because it was an early work (for me) where: (i) Spatial-synthesis was an important consideration; and (ii) [There exists a] high level of determinism in the musical structure. Computational models were used extensively, although all computation was done by hand. In fact everything was done by hand – live singing, recording onto multi-track tape recorders, real-time mixing, real-time spatial-synthesis (involving modifications

to a TASCAM audio-mixer and the building of analogue distance faders!). These were based on the work by John Chowning (1971), [which] led to the design of the 16-channel mixer I designed and built in 1983–1984 and, subsequently, to the design of **SPACE_N** [a program from the composer's **IANSMUSE** software suite]". {Ian Fredericks, 12.x.2000}

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TRACK 4. IAN FREDERICKS (1943–2001): *SPIRALS* (1998) 5':10"

Spirals is excerpted directly from the original (April 1998) version of ***StarMist***. Here, however, the relative volume level is raised considerably. The piece consists of a single gesture – (i) a long, sustained tone, followed by (ii) an expanding pattern of pitches – repeated over and over again. These gestures are progressively superimposed upon one another, often transposed, and accumulate to form a complex texture (a tangle, a 'mighty babble'!), whereupon the piece simply ends quite abruptly.

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THE INCOMPLETE CYCLE *DEATH OF A DRAGON* (1999–2001)

Death of a Dragon is a large-scale episodic work envisaged as being accompanied by a dance performance; it was composed for dancer/performing artist Tess De Quincey. It consists of nine episodes each of which can be a 'stand-alone' piece in its own right. Like ***StarMist***, ***Death of a Dragon*** is primarily designed as a vehicle for the exploration of **IANSMUSE** [the software suite developed by Ian Fredericks] in its entirety as well as my ideas on performance of multi-channel computer-based works. The work includes choreography and lighting design by De Quincey. The intention is to prepare an initial dance choreograph, record this initial performance in a studio environment using digital recording technology, and then edit and transform the product using a digital editing suite and computer editing facilities. The end product of this part of the exercise will then be used as visual accompaniment to a second choreograph which will be designed for live public performance. Considerable thought has been given in this piece to the use of very long musical gestures (phrases). The idea here, as in ***StarMist***, is not to follow in the path of minimalist composition but to develop phrases which will allow the choreography to make use of long, slow gestures. I was first drawn towards this type of gesture after seeing a performance by two women gymnasts during a circus performance in Beijing in 1986. The slowness with which these women could move was remarkable. I was again drawn towards the style of gesture in 1998 when I attended a workshop given by Tess De Quincey and Stuart Lynch in the Rex Cramphorn Theatre in the Performance Studies Department of the University of Sydney. In this case the performers were attempting to imitate the actions of a preying mantis, an image of which was projected onto a large video screen at one end of the theatre.

The music for ***Death of a Dragon*** is all realized in a phase-coherent ten-channel audio format. This format is intended for live performance of the completed work. Several other audio mix-downs of the ten-channel format that I have designed for spatial-synthesis using more universal matrixing formats have also been prepared. These include ambisonics, Dolby Pro-Logic, Dolby 5.1 surround sound, standard two-channel stereo and a special binaural mixing algorithm for headphone listening. A video recording using digital recording technology will be made of a public performance and this will represent the work in its entirety.

The programmatic impetus behind ***Death of a Dragon*** comes initially from the Arthurian legends, but the essence of the legends is made more universal. I was particularly influenced by the writings of Laurence Gardner in **Bloodline of the Holy Grail** (1996), and have long held a fascination for the establishment of warrior groups such as the Templars.

The legend of King Arthur is timeless and has been rewritten (interpreted) in a number of twentieth-century epics (Boorman, **Excalibur**; Bradley, **The Mists of Avalon**; Lindskold, **Legends Walking – A Novel of the Athanor**; White, **The Once and Future King**) along with extensive re-editing of the older versions of the legend (Vinaver, **Malory, Complete Works**; Tennyson, **Morte d'Arthur**; Staines, **The Complete Romances of Chrétien de Troyes**). The legend also finds itself in many modern epic tales of man's fight for life. J. R. R. Tolkien was an Arthurian scholar, and the essence of the Arthurian legend and the idea of a search for the Holy Grail seems to be strongly present in his **Lord of the Rings**. (Compare, for instance, Tolkien's Bilbo with the Arthurian Perceval – "a simple country boy" [Pitkin Guides, **Knights of The Round Table**].) Tolkien however

endows his hero with the task of returning the talisman (rings) rather than acquiring it. It is difficult to watch the cinema epics of George Lucas's **Star Wars Trilogy** without being constantly reminded of the essence of the noble knight's (Lucas's Luke Skywalker) battle with the 'Dark Side' as embodied in the character of Darth Vader (the evil dragon?). Arthur himself is Obi Wun Kanobi, while Merlin is Yoda, and the scene in **Return of the Jedi** where Luke Skywalker is instructed in the art of *The Force* has a parallel to Merlin's instruction of Arthur as a boy and the concept of extraction of *The Sword* from the rock (of secret knowledge). The Camelot idea seems present in the concept of **The Third Republic**, the noble Guinevere in Lucas's Princess Leia character, and Sir Galahad and/or Lancelot in Lucas's Hans Solo. And so the legend continues to be told.

The socio-philosophic basis of different aspects of the legends are extrapolated to a more general consideration of the human condition where the quintessence of the legend is considered. The work is also the quintessential use of **IANSMUSE**. ***Death of a Dragon*** then is a metaphorical narrative of life and the timeless 'search for The Holy Grail'. The concept of the Dragon in ***Death of a Dragon*** embodies both the European idea of the dragon as evil destroyer and, at the same time, the Chinese idea of the Dragon itself as the embodiment of 'all things pure' (Sun Tzu, **The Art of War**).

The use of myth is often exploited as the basis for musical composition, even to the point of the development of an entire genre – opera – to serve as such a vehicle. The operas of Richard Wagner draw heavily from the Arthurian legend (**Parsifal**, **Tristan and Isolde**). The use of myth is also found in many works for dance (ballet): **Nutcracker Suite**; **A Midsummer Night's Dream**; **Prelude to the Afternoon of a Faun**. ***Death of a Dragon*** draws heavily from the nine movements of Igor Stravinsky's **Rite of Spring** for its formal structure. Its nine movements programmatically derive from themes contained within the legend, but the names of the episodes are chosen to be more universal (except for ***Excalibur***, which is universal in itself in Western Mythology): (i) ***Warriors*** [also known as ***Nine Knights***]; (ii) ***Sorcerer***; (iii) ***Battle of Darkness*** [***The Battle of Camlan***]; (iv) ***Excalibur***; (v) ***Death of a Dragon***; (vi) ***Maze of Glass***; (vii) ***Lament for the Dragon***; (viii) ***The Pool of the Talisman***; and (ix) ***Grail***. {Ian Fredericks, 12.x.2000}

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From the incomplete cycle *DEATH OF A DRAGON* (1999–2001):

TRACK 5. IAN FREDERICKS (1943–2001): *NINE KNIGHTS* (1999) 8':08"

The first episode, ***Warriors*** [***Nine Knights***], refers initially to the Order of Knights of the Round Table in the Arthurian legend and the subsequent formation of actual Orders of Knights such as **The Knights Templar**, **The Crusaders**, **The Rose of the Cross** [**Rosicrucians**], **The Hibernian Society**, **The Freemasons**, and so on. The concept is then generalized to the idea of the *Warrior Spirit.* The essence of the *Warrior Spirit* as I see it is calmness, for the warrior must first be *The Stalker*, the one who goes quietly into the hunt and blends into the environment unnoticed until the moment of the kill (Carlos Castineda, **Journey to Ixland** and **A Separate Reality**; Sun Tzu, **The Art of War**). The music is calm with strange harmonies created from the equal-tempered eighteen-tone-per-octave scale, the basis of which is a microtonally-inflected Dmin7 9 11 13 chord. The rhythm is slow and constant; the mood one of quiet moral and physical strength. {Ian Fredericks, 12.x.2000}

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TRACK 6. IAN FREDERICKS (1943–2001): *TALISMAN* (2000) {A mere shard} 0':22"

[This tiny fragment appears to have been intended for the cycle's ***Excalibur*** movement, or, perhaps, for ***The Pool of the Talisman***. Fredericks writes:] "In the Arthurian legend, at the bequest of the dying Arthur, the brave and loyal (although physically challenged) knight Bedivere, 'the only one of Arthur's close companions still with him after the Battle of Camlann ... was entrusted to return the enchanted sword, **Excalibur**, to lake ...' (Pitkin Guides, **Knights of the Round Table**) from which it had been originally won from The Lady of the Lake by the magician Merlin. 'Dozmary Pool, on the Bodmin Moor in Cornwell, is thought to be the legendary lake' (ibid.).

"Here again an attempt is made to make the concept more universal and The Pool is seen as the place where the talisman should be returned in order that its power be contained and kept away from the hands of warmongers.

In our current society, the talisman of technology needs to be cast into the pool of reflection lest it destroy 'the whole God-damned human race' (Fredericks, ***Viable Alternative***).

"**Excalibur** is the archetypal *talisman*. Excalibur enters the battle [the Battle of Camlan] with a strange and haunting sound reminiscent of the Sirens (Homer, **The Odyssey**). The promise of help from a supernatural force suspends all earthly sounds of battle as it weaves its special magic, but the ultimate irony rears up – as in its impersonalness it must – and smites not only the vengeful but the avenger as well. Oh well, so much for the incurable logic of war. This theme of the mutual destructibility of war was explored in earlier works of mine (***Viable Alternative*** (1983); ***Some Quiet Graveyard*** (1984)) as well as by composers in the popular music area (Pink Floyd, **The Final Cut** and **The Wall**; Bob Dylan, **Masters of War** and **Where have you been my Blue Eyed Son**) and is in my view one of considerable importance at this time in history, where the weapons of mass destruction in the hands of all who have 'God on our side' (Dylan, **Masters of War**) assure mutual destruction of all who engage in the *Art of War* (Sun Tzu, **The Art of War**). The power of the talisman is now too great to behold. The destruction of the earth (not only the world) is now in the hands of *the common man* and no longer [only in] the domain of God! Decisions must not be left only to the *old men*. The 'wisdom' of *wisdom* must be re-examined and the 'getting of wisdom' must include that which comes from *mouths of babes*. {Ian Fredericks, 12.x.2000}

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TRACK 7. IAN FREDERICKS (1943–2001): *DEATH OF A DRAGON* (1999) 15':42"

Death of a Dragon is the outcome of war. In ***Death of a Dragon***, Arthur himself is first seen as *The Dragon* but here in the Eastern sense of "an age-old symbol of the highest spiritual essence, embodying wisdom, strength and the divine power of transformation" (Sun Tzu, **The Art of War** [Shambhala Dragon Editions]). I was vividly reminded of the meaning of this choice recently (August 2000) when my very good friend and mentor (of some 25 years) Emeritus Professor Sir Peter Platt ("Prof") died [on 2.viii.2000]. Prof was a real Dragon in this sense as a man, as a friend, as a boss, as a colleague, as a musicologist, a music theorist, a composer, an administrator and, especially, as a teacher and mentor where he seemed to possess the power to transform his students into broad-thinking and caring human beings. ***Death of a Dragon*** is dedicated to Prof; he will be sorely missed as a true Dragon.

The movement (episode) is composed of several layers. The long sustained notes, each one of which consists of a downward gliding tone (over the interval of one octave), are derived from the notes of the chords Dmin7 9 11 13 used in ***Nine Knights*** and Cmaj7 9 11 13 (an octave inversion of the former chord), which are microtonally adjusted from an eighteen-note equal-tempered scale; they represent the grieving of the Knights (of the Round Table). A full range of sonorities and registers are used here, extrapolating the narrative to women and children as well as men. The micro-tunings of the 'target' tones and the fact that the starting time of each is staggered, create a background (almost a drone) of unpredictable, strange and mournful harmonies (reminiscent of the 'strange' harmonies described by Aldous Huxley as his hero enters the valley of Erehwon (Huxley, **Erehwon**)). The downward gliding nature of this setting is further enhanced (in retrospect) by the final (high) note that is pitch-wise stationary. This strangeness is again enhanced by the slow continuous spatial movement of each of the notes individually. The discrete spatial movement along with continuous timbral evolution of each individual note keeps the notes psychoacoustically separate and impairs the acoustic and psychoacoustic adding or blending of the continuously moving timbres, suspends a feeling of *out-of-tuneness* which allows the harmonic intent to manifest as other than merely dissonance.

The noise-based notes represent the final breathing of the dying dragon (Arthur was not killed immediately but took several days to die!). The movement is punctuated by a single repeating note representing (initially) the cries of anguish of the three women (three Queens – including Guineveve) who took Arthur from the battlefield (Camlan) and transported him to Avalon and nursed him through his dying hours. The analogy is again universalized to imply all cries of anguish of all women, men and children at the death of any dragon. The musical nature of these *cries* (several notes portamento-ing together) and the slow relentless repetition was inspired by the relentless tolling of the mourning bell during the funeral of Princess Diana in 1997. The telecast that I watched was a moving real-time portrayal of a funeral for another true dragon.

The ***Death of a Dragon*** movement comprises three separate parallel [i.e. superimposed] parts. The first part ... consists of 13 long sustained notes (2':15" each) which form the main structural element of the movement. The first twelve of these glissandi span an octave. The entry times of most of these notes are at arbitrary points along

the time-axis, creating a texture of downward-sliding pitches which at times overlap to create a progression of indeterminate and unpredictable microtonal harmonies. Two entries are, however, synchronized, giving contrasting traditional harmonies. The second part consists of a time-stretched rhythm constructed of noise-sounds, which programmatically represent the 'dying breath'. The third part is a series of 'cries' representing cries of anguish. The cries are all identical, provoking a sense of the inevitability and immutableness of death. The sound used here is the same timbre and pitch as used in ***Nine Knights***. {Ian Fredericks, 12.x.2000}

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TRACK 8. IAN FREDERICKS (1943–2001): *MAZE OF GLASS* (2001) 7':42"

"***Maze of Glass*** derives its narrative theme from the Welsh influence of the Arthurian legend and is the place where Arthur was buried [i.e. Avalon – The Isle of Glastonbury?]". {Ian Fredericks, 12.x.2000}

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Indeed, to quote the Welsh historian Gerald of Wales (*c*.1146–*c*.1223) from his **Liber de Principis instructione** (*c*.1193), "What is now known as Glastonbury was, in ancient times, called the Isle of Avalon. It is virtually an island, for it is completely surrounded by marshlands. In Welsh it is called **Ynys Afallach**, which means the Island of Apples, and this fruit once grew there in great abundance. After the Battle of Camlann, a noblewoman called Morgan, later the ruler and patroness of these parts as well as being a close blood-relation [cousin?] of King Arthur, carried him off to the island, now known as Glastonbury, so that his wounds could be cared for. Years ago, the district had also been called **Ynys Gutrin** in Welsh – that is, the Island of Glass – and from these words the invading Saxons later coined the place-name 'Glastingebury'".

Gerald also observed that Glastonbury's earliest name in Welsh was **Ineswitrin** (or **Ynys Witrin**), the Isle of Glass, a name noted by earlier historians insinuating that the location was once seen as an island: "In remote times, the place used to be called ... the Island of Glass, no doubt from the glassy colour of the river which flows around it in the marshland. As a result, the Saxons who occupied the area later on called it 'Glastonia' in their language, for in Saxon or English 'glass' corresponds to the Latin word 'vitrum'" [from Gerald's **Speculum Ecclesiae** (*c*.1216)].

Maze of Glass is probably Ian Fredericks' final composition. Since I have no concrete information at all – not even a programme note! – concerning the specific techniques and ideas whereby this piece was composed and realized (apart from its usage of Fredericks' own **IANSMUSE** software), I am content to allow the music to speak for itself.

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TRACK 9. IAN FREDERICKS (1943–2001): *LAMENT FOR THE DRAGON* (2000) 9':25"

Lament for the Dragon was written and realized the week after the death of Prof (see above, ***Death of a Dragon***). When my own [grand]father died (Francis Clarence "Clarie" Fredericks, 1890–1978), I attempted to write a **Lament for my Father**, but was always *blocked* in my effort. This Lament is then universalized again to represent the passing of the guidance of wisdom from the young warrior's ken and the learning to deal with profound loss. {Ian Fredericks, 12.x.2000}

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COMPACT DISC 2

From the incomplete cycle ***DEATH OF A DRAGON*** (1999–2001):

TRACK 1. IAN FREDERICKS (1943–2001): *AVALON* (2000) {Section 2} 3':16"

The reference to the Arthurian legend here is to the aftermath of the Battle of Camlan, where Arthur met in battle with his illegitimate and evil son [or nephew] Mordred who sought to dethrone Arthur. Arthur delivers

Mordred a mortal blow, and the dying Mordred cleaves Arthur a fatal blow to the head. [As affirmed above in relation to ***Death of a Dragon***,] "three women (three Queens – including Guineveve) ... took Arthur from the battlefield (Camlan) and transported him to Avalon [The Isle of Glastonbury?] and nursed him through his dying hours". Here is the quintessential battle between 'good' and 'evil'. My personal 'psycho-socio' interpretation of this relates to an aging person confronting the sins (misdemeanours) of their early life, battling personal misgivings and finally 'making peace with their God'. {Ian Fredericks, 12.x.2000}

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TRACK 2. IAN FREDERICKS (1943–2001): *VIABLE ALTERNATIVE* (1983) 18':46"

Viable Alternative was composed as a radiophonic sound-drama. Sounds were recorded from broadcast waves, distorted using various recording studio techniques and combined with other sounds, including music sequences, which were recorded and altered in various ways. A library of sounds was built up in this way, and the piece put together using multi-track tape recorders, tape-splicing techniques, and a range of audio-mixing techniques, including stereo matrixing for spatial manipulations. Sounds invoking different images were juxtaposed against one another, both vertically and horizontally, resulting in a kind of collage on a time-canvas. The trick with this type of composition is to ensure that the work proceeds in accord with temporal rules that are musical in essence. That is, sounds are combined in order to make music-like phrases which are then combined in contrapuntal ways to generate structures containing 'harmonies' of sound and meaning. The end result is a dream-like sound-structure which in this case is the worst nightmare, the 'ultimate obscenity'.

Viable Alternative is based on that which I consider to be the most profound event in the history of mankind and the most profound utterance ever to be broadcast: *This is one small step for a man; one giant leap for mankind*, which was followed by that statement of awesome simplicity – *We came in peace for all mankind*. The alternative use for knowledge, science and technology is nuclear war – an alternative which political forces would have us accept as viable. [But] *A nuclear war could ruin your whole day*.

The first version of ***Viable Alternative*** was composed for the **WATT** concert of 1983 and developed into an audio-visual work. [***Viable Alternative*** also received a certain amount of assistance in its composition, recording and sound-mixing from David Turnbull. In addition to the voices of Jane Fitch, Joshua Fredericks, Rebecca Lawson (née Fredericks) and David Turnbull, the composer's own voice is heard in various guises throughout the piece – most clearly and poignantly in the soliloquy that concludes it.] {Ian Fredericks, 1996}

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TRACK 3. IAN FREDERICKS (1943–2001): *SOME QUIET GRAVEYARD* (1984) 11':54"

Some Quiet Graveyard was inspired by thoughts of the awesomeness of the universe. Hanging raggedly off an insignificant star in a minor galaxy somewhere on the outskirts of the universe is a minor planet which on a cosmic time-scale can at best be considered 'some quiet graveyard':

> *Beyond the moon / Beyond the darkness / Starkness / One small cloud of dust / Just / Some Quiet Graveyard / Beyond the speed of light*

In most cases when I compose a piece, I use the work as a study for the exploration of some aspect of the technology. This leads to a very intimate relationship with the technology, and often involves design and construction of equipment and/or the development of computer software. A feedback situation then exists where musical requirements directly dictate technological research and design, and these in turn modify the musical possibilities.

Two things were of special interest in ***Some Quiet Graveyard***. First, all waveforms in the piece were generated using a synthesis technique which I call 'continuous dynamic additive synthesis'. This was implemented on an Apple II computer with Mountain Computer music cards installed. A real-time performance instrument was designed which allows a joystick continuously to vary the relative levels of a family of sine waves which form the harmonics of the sound. By moving the joystick during performance, timbre constantly changes. All sounds in ***Some Quiet Graveyard*** were generated using this device – not by changing a 'voice patch' but by 'playing' the joystick.

The second interesting feature was the continuous spatial manipulation of all sounds. Several performance

devices were designed and built for this. One was a foot pedal operated device which varies parameters relating to the relative distance of a sound-source from the listener. This was used to generate envelopes for the drum-like sounds. These 'notes' were then panned into four channels using a small computer built for the purpose. Hand-controlled devices were used for the melodic lines. The end result of this technical work was a studio full of stuff which allowed me to play the various musical lines onto multi-track tape recorders while continuously manipulating timbre and spatial position.

The versatility of such performance control considerably influenced the composition of ***Some Quiet Graveyard***. Melodic movement is related to spatial movement in several ways: melodic intervals are seen as variations in Doppler Shift; dynamic range (particularly *crescendo* and *diminuendo*) is derived from the 'nearness' of a note to the listener; and melodic climax is heightened by causing the instruments to move close to the listener. A counterpoint between spatial movement and melodic movement is established using only one melodic line.

For the concert performance of this piece, four-channel playback is used, and a visual element is included. This consists of the projection of computer-generated images derived from photographs of stars and galaxies. The colour of the projection is continuously varied by altering the relative brightness of red, green and blue projections which are then mixed to a composite colour. The mixing process here is similar to the process of mixing relative levels of harmonics to derive a composite sound-tone for timbre synthesis as described above. The result is a close relationship between musical timbre and image colour.

This piece is dedicated to my wife Dawn. {Ian Fredericks, 1989}

[Fredericks continues:] "It is a deterministic piece and used the first *Computer Instrument* that I designed and built myself, as well as the distance-faders and a panner/distance-fader combination gesture-capturing device". {Ian Fredericks, 12.x.2000}

"... computer music composition, unlike other genres of composition, is in no way genre-specific. Unlike serial composition theory, it does not exclude tonality. Unlike Western tonality, it does not insist on a seven-note scale or exclude modality. In fact, aspects of all three of these theories can live side-by-side in a computer work. One such instance of this is my work ***Some Quiet Graveyard*** (1984). Its first movement uses a percussive section in several parts, which is through-composed in a strict serial way. Superimposed over this is a second section that consists of two parts which strictly use a Phrygian mode. The modal parts were improvised in the studio against the percussion parts using a purpose-designed and -built computer musical instrument specifically designed to provide continuous control over timbre and spatial position. The second movement is a straightforward tonal melody with very sparse and simple harmonization. This movement was through-composed, in very strict common time and played on the above instrument. I believe the piece is very successful in the way these disparate forces are combined. [Further detailed explication of ***Some Quiet Graveyard*** occurs during Ian Fredericks' final interview, with Andrew D. Lyons, published in **Chroma** Nos.26–27, March 2000, pp.9–15; downloadable from < http://acma.asn.au/chroma_pdf/Chroma6.pdf >.] {Ian Fredericks, 29.iv.2000}

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TRACK 4. IAN FREDERICKS (1943–2001): ***REQUIEM FOR A PLANET*** (1994–1995) 21':48"

1. ***Requiem and Kyrie*** @0':03"
2. ***Dies Irae*** @3':58"
3. ***Bell Storm*** **and** ***Sanctus*** @12':30"
4. ***Agnus Dei*** @18':09"

Requiem for a Planet, "for Jean Lennane", is a radiophonic work commissioned by the Sydney radio station 2MBS-FM, with financial assistance provided by the Performing Arts Board of the Australia Council for the Arts. That is, the work's primary venue for performance is two-channel stereo radio and other like recorded media.

The entire work was synthesized and edited on my own PC-based computer-music workstation in the '.WAV' multimedia format using mainly my own software base **IANSMUSE**, which I originally developed for the multi-user, eight-channel, phase-coherent computer music system project called **JESSIE** in the Music Department at the University of Sydney (SUESS). The project was first established in 1987 under the direction of Professor Peter Platt, but was closed down in 1993. I am now continuing the work as a privately-funded project. This is the first piece produced on the new (1993–1994) PC-based workstation.

The basic ideas for ***Requiem for a Planet*** have been in my mind for a number of years now. Sometimes I like to work with strong dramatic images, particularly in relation to the 'radiophonic' concept. The imagery in the Requiem Mass, especially the 'Dies Irae' (Day of Wrath), provides excellent material for a dramatic piece. The Latin text provides a wonderful source of dramatic sound, particularly in the context of our modern Western culture. Primal implications counterpoint with exactness and precision evocative of our modern sciences. Juxtaposed against the strange-sounding rhymes (*futurus*, *venturus*, *[dis]cussurus*) and the repetitive meter, the theosophical suggestions of the end of human reality are strongly conveyed – even though the exact textual meaning would escape all but those who have taken the time to study this strange 'frozen' language.

If a 'modern' translation of this text is attempted with the emphasis on a true 21st-century cultural meaning, then the picture painted of the end of the world in the light of modern cosmological knowledge is quite astonishing. For example, the first two verses of the 'Dies Irae':

> *There will come a day of great wrath, and on that day all of humanity will be broken down into the ashes of the dead, and this will be witnessed by David (Son of God) and the prophetess Sibyl. This time of great trembling is destined to come, and at that time the Judge will come in the form of a mighty wind, and each and every human being will be summarily shattered to pieces.*

Compare this 'word picture' with the scenario of the Sun going supernova!

One of the most demanding aspects of ***Requiem for a Planet*** was the computer synthesis of all the voices (both 'spoken' and 'sung'). It was esoterically important to me to be able to accomplish this synthesis and not resort to the use of 'treated' samples and/or recordings of real human voices because of the philosophical implications of being emotionally motivated by something as alien as a talking machine. It was therefore important to generate emotive speech and not just strings of words. In order to do this, most of the speech, particularly the coarse whispering, is in fact closely scored 'singing'. In this way, that which began as a somewhat overly histrionic and 'threatening' reading was eventually moulded into something which is, at times, almost suggestive of pathos. (Compassion from a machine?)

Two separate synthesis techniques were used. The first is an additive synthesis technique which I wrote as part of **IANSMUSE**. It allows for continuous specification of musical parameters over an arbitrary time-scale. The specification is then interpolated by the computer programs **ADD** and **SPACE_N**. Continuous and very precise specification of pitch – to one millionth of a semitone – volume, timbre, and spatial position, along with various types of 'jitter', are possible, resulting in a well-animated sound which constantly evolves in 'natural' ways. This technique was used for the sustained sung vowel tones in the ***Requiem and Kyrie***, and for the bell-like sounds in the ***Bell Storm*** and ***Sanctus***.

The second technique uses the commercially-available so-called 'speech synthesis engine' known as 'Text Assist' for 'Windows'. This 'speech synthesis engine' uses a DSP chip driven by a Windows software package which calls for the specification of a phoneme followed by a number that represents pitch (1–37) in semitones and time-length to sustain that particular phoneme (in milliseconds). Pretty basic tools to try and synthesize sung Latin and 'expressive' Latin text-readings, but it is surprising how quickly one becomes proficient in the use of 'basic' tools when one is unencumbered by masses of documentation describing some computer programmer's idea of the way things, particularly music, work in the real world. Of great use, however, was the 'Speech Dictionary' which gives a limited phonetic interpretation of the words typed into the dictionary. This provided a means of translating the Latin words into the set of phonemes which the speech synthesizer could 'understand'. The one big problem with all of this, however, was that the phonetic structures provided are all based on models of American English. I spent quite a lot of time trying to remedy this – to 'get the Yankee sound out of it all' (sigh!). {Ian Fredericks, 1994}

[The composer concludes:] "***Requiem for a Planet*** is a spatial piece [which] also explored (for me) the area of computer speech-synthesis, ... it was later (1998) used to explore working with a *dancer*. It was here that we developed the **SCORE** [from **IANSMUSE**] for the dance. Here also I started the choreographing program **DANCER** [likewise, from **IANSMUSE**] for Tess De Quincey". {Ian Fredericks, 12.x.2000}

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From the unfinished trilogy *TRILOGY OF THE MIST* (1992–1998):

TRACK 5. IAN FREDERICKS (1943–2001): *STARMIST* (1997–1998) 24':38"

Like many of Ian Fredericks' acousmatic compositions, ***StarMist*** consists of independently-conceived episodes

(sections) abutted together that are thematically unrelated to one another – at least superficially. Each episode develops internally as new material is introduced into it, and then it simply ends. ***StarMist***, like the unfinished ***Death of a Dragon*** cycle, is a virtuosic investigation of various programs from Fredericks' software suite **IANSMUSE**; it is also intended to be accompanied by a dancer and, doubtlessly, by lighting and image-projection (see below). Poetically, I imagine that each episode could be thought of as representing a distinct type of cosmic structure, such as an astral or galactic formation. We already know that one of ***StarMist***'s episodes has been extracted to form a separate self-contained piece in its own right, ***Spirals*** – perhaps it is an abstract depiction of a distant 'spiral galaxy'? (Interestingly, there exists a slightly shorter version of ***StarMist*** which omits the '***Spirals***' episode altogether! Lasting a little less than 20½ minutes, it dates from November 1998 – around seven months after the version presented here was realized.)

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[The composer himself further elucidates:] "Thematically, ***StarMist*** is a musical story of creation. I think in terms of a combination of the Biblical account of creation of the universe and a scientific account. I have always found it hard to understand the rift that has developed between the Biblical view and the scientific view. To my mind, the one doesn't challenge the other in any profound way. The whole problem seems to me to come down to a simple realization that God created the universe and all science has ever done is to try and explain how He did it.

"In seven steps (days?), the ***StarMist*** view goes something like this:

> *And the Watcher looked to the edge of the universe. / And saw the Quasi Stellar Object. / The unknowable. / The Quasar. / Bright eye shining in the abyss. / The eye of God. // And at the centre of the Quasar the Super Massive Black Hole. / Slayer of Galaxies. / That into which all things will pass. / The heart of the abyss. / Death of the universe. // And at the centre of the Black Hole The Watcher saw the uncertainty. / The singularity. / That from which all things evolve. / The beginning of the universe. // And from here springs Entropy. / The flow of energy. / The chaos. / The well-spring of creation. / The breath of God. / The StarMist. // And from the misty breath the Watcher heard the Call of the Synapse. // And from the chaos, Cognition. // The First Circle. // The Watcher of the eye of God.*

"***StarMist*** remains an ongoing research and composition project. I am using the work as a vehicle for exploring a number of research-based projects, including **IANSMUSE** – a computer music environment which I began developing in 1987 while teaching at the Sydney University Experimental Sound Studio [SUESS] in the Faculty of Arts' Music Department at the University of Sydney. **IANSMUSE** consists of a series of computer programs which are used for software sound- and space-synthesis, along with a methodology for storing and maintaining the database of music- and sound-files. The music for ***StarMist*** was entirely composed using this environment. All sounds were synthesized in software. Sampling technology was not used anywhere in the piece.

"I began ***StarMist*** in 1997 after meeting performance-artists Tess de Quincey and Stuart Lynch during a workshop in the Rex Cramphorn Theatre in the Performance Studies Department at the University of Sydney. I was inspired by this meeting to write a substantial multimedia/dance piece. The music was finished in April 1998.

"On this occasion, the collaboration with Tess is impromptu, and the dance will be largely improvised. The improvisation is developed from the same basic choreographic imagery drawn up by Stuart earlier this year.

"In April–May 1998, I worked with Stuart on developing an initial choreography for the work. One outcome of this collaboration was a method of mapping a choreology onto a representation of the temporal structure of a piece of computer music (score). This consists of a set of printed pages with a sonic amplitude vs. time-plot of the music running down the left-hand side of the page and with grid-markings across the page at specific time-intervals. This provides a very accurate time-record of events as they occur in the music. The choreographer then adds a second vertical graph representing a view of the dramatic structure of the music. Other vertical graphs can be added to represent other parameters as may be required by the particular choreography. Further columns are then provided for written comments and/or 'storyboarding' as may be required by a particular work. No limit is placed on the width of the score. The technique allows for arbitrary additions that provide what ever level of choreographic detail is required at any time and at any point in the piece.

"Lighting specifications can be included along with any other staging specifications that may be required. We also used the method in the preparation of a performable score for video director Russell Emerson in order to film studio performances of this and other works. Every direction thus remains locked into the time-graph of the music. The technique is clearly not restricted to computer music.

"The ongoing nature of the work will lead us into explorations of ways of rigorously scoring the meta-structure of the musical composition. It is our ultimate intention that the dance will originate from this level of musical

understanding. To this end, I am writing a computer program [**DANCER**; from the **IANSMUSE** software suite] which will assist the choreographer to devise gestures consistent with the musical gestures, thus enhancing the integrity of the artistic structure of the piece. {Ian Fredericks, Programme Notes for the 1998 **WATT** concert, Newtown, NSW, 12–13.xi.1998}

[Ian Fredericks elaborates:] "Much of this work was developed in the Rex Cramphorn Theatre with Russell Emerson, Stuart Lynch and Tess De Quincey. I designed hardware for this space including: (a) a multi-loudspeaker array for spatial-synthesis using **SPACE_N** [a key program from Fredericks' **IANSMUSE**]; (b) loudspeakers; (c) a sub-woofer electronic crossover system for multi-channel presentations in large rooms; (d) an audio mixer for distribution to multi-channel arrays (this was a redesign of an earlier mixer); and (e) multi-channel analogue panning devices.

"***StarMist***, the third piece of a projected ***Trilogy of the Mist*** (the other two pieces being ***MountainMist*** and ***SeaMist***), makes extensive use of space-synthesis in its compositional intent, all of which was done in software on a PC using my own **SPACE_N** program (which will project into up to 256 –N- discrete channels). This realization was restricted to two channels, but is encoded so as to decode into a multi-channel speaker array. The work will be best realized if decoded using a Dolby Pro-Logic decoder or similar, and distributed into a five-speaker array in the usual 'Home Theatre' way. In a large room (concert hall), the delay on the 'surround channels' on the decoder should be set to zero. {Ian Fredericks, 29.iv.2000}

[Elsewhere, Ian Fredericks writes:] "***StarMist*** is 24min:38sec. long and is therefore a MAJOR work according to the criteria set down by the Australian Research Council [ARC], which defines a major work as a work that is over 20 minutes in length. The trouble is that it is seemingly impossible to get a MAJOR work performed in its entirety anymore. In 1998, ***StarMist*** was presented three times: firstly, at the Australian Computer Music Association [ACMA] 1998 Conference in Canberra, where the first 12 minutes were played; secondly, at the Percy Grainger thing [Conference?] in Melbourne, when a 10-minute version of the 12-minute version was played (I think); the third time in Sydney at the 1998 **WATT** concert, when a 16-minute version was played. After much consternation over the time-length, several sections had to be cut. On this occasion, for the 1999 ACMA conference, I submitted the whole (MAJOR) – all 24min-and-38sec. – piece for a place in one of the concerts, but was not even given the courtesy of a reply to my submission (just as I was not given the courtesy of a reply to a submission for one of my papers on Space-Synthesis).

"But God and perhaps Greg Schiemer are on my side, and I am determined to have my MAJOR work played in its entirety even if it is over the span of a year. Therefore, I have asked Greg (God was busy at the ARC) to present you with the second half of ***StarMist*** on this occasion [at some time in 1999] – I will only take up 12 minutes of your time. The programme note is from the 1998 **WATT** concert held in Newtown, Sydney.

"Sorry I can't be with you this time". {Ian Fredericks, 19.x.2000}

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CD1 TRACKS 1 & 3 *and* ***CD2 TRACKS 2, 3 & 4*** *– Composed, realized, and recorded by Dr Ian Fredericks at the Sydney University Experimental Sound Studio [SUESS], directed by Dr Ian Fredericks, Department of Music, the University of Sydney. These Tracks were previously released on JADE Records JADCD1024 {**Ossia** (1991)}, Australian Computer Music Association ACMA (Vol.2) {**Assembly** (1995)}, Tall Poppies TP074 [CD1] {**WATT ever** (1996)}, Anthology of Australian Music CSM 5 {**Electroacoustic Music** (1989)}, and Anthology of Australian Music CSM 26 {**Electroacoustic Music** (1996)}, respectively.*

CD1 TRACKS 2, 4, 5, 6, 7, 8 & 9 *and* ***CD2 TRACKS 1 & 5*** *– Composed, realized, and recorded by Dr Ian Fredericks in his own home-studio at Lewisham, Sydney. These Tracks have never before been released on CD.*

*The compilation **Sunrise** was mastered by Don Bartley at Benchmark Mastering, Blaxland, NSW, 20.vi.2016 – Landline +61(02) 4739 5455; Mobile +61 0412 217 779; Website < http://www.benchmarkmastering.com/index.html >; e-mail < info@benchmarkmastering.com >.*

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Images therein comprise: a sunrise; a photograph of the late Ian Fredericks playing – sometime during the late 1970s or early 1980s – a Putney VCS3 analogue synthesizer; a photograph of Ian Fredericks and Martin Wesley-Smith; and an image of the Western Veil nebula, NGC 6960 (the remnants of an old supernova) with filigree red and blue wisps of gently glowing

gas-loops across thousands of background stars from the Milky Way, in the constellation Cygnus – 'star mist'.

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Ian Fredericks playing – sometime during the late 1970s or early 1980s – a Putney VCS3 analogue synthesizer.
[Photographer unknown]

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